What is claimed is:

1. A system for receiving an input, for communicating the input as a divisional multiplexed signal having orthogonal subcarrier components communicated over a channel, and for providing an output, the system comprising,

a transmitter mapper for providing the orthogonal subcarrier components from the input,

a transmitter inverse transform for respectively inverse transforming the orthogonal subcarrier components into transmitter inverse transformed signals,

a transmitter forward transform for respectively forward transforming the orthogonal subcarrier components into transmitter forward transformed signals,

a transmitter multiplexer for divisional multiplexing the transmitter inverse transform signals and the transmitter forward transformed signals into the divisional multiplexed signal being communicated over the channel,

a receiver demultiplexer for receiving and for divisional demultiplexing the divisional multiplexed signal into receiver inverse transformed signals and receiver forward transformed signals, the receiver inverse transformed signals originating from the transmitter inverse transformed signals and the receiver forward transformed signals originating from the transmitter forward transformed signals,

a receiver forward transform for forward transforming the receiver inverse transform signals into first parallel mapped signals,

a receiver inverse transform for inverse transforming the receiver forward transform signals into second parallel mapped signals,

a receiver mapper for respectively mapping the first and second parallel mapped signals into first and second receiver signals,

a combiner for combining the first and second receiver signals into the output signal.

2. The system of claim 1 wherein,

the divisional demultiplexing and divisional multiplexing is selected from the group consisting of frequency division, code division and time division.

3. The system of claim 1 wherein,

the transmitter and receiver inverse transforms are discrete transforms, and

the transmitter and receiver forward transforms are discrete transforms.

4. The system of claim 1 wherein,

the transmitter inverse transforms and receiver inverse transforms are inverse fast Fourier transforms, and

the transmitter forward transforms and receiver forward transforms are forward fast Fourier transforms.

5. The system of claim 1 wherein,

orthogonality of the orthogonal subcarrier components is maintained during the transmitter and receiver inverse transforms and during the transmitter and receiver forward transforms.

6. The system of claim 1 wherein,

the divisional demultiplexing is frequency divisional demultiplexing,

the divisional multiplexing is frequency divisional multiplexing, and

the output is insensitive to relative frequency offsets of the divisional multiplexed signal during communication over the channel.

7. The system of claim 1 wherein the input is a sequence of data symbols, the transmitter mapper comprises,

a serial-to-parallel converter for converting the sequence of data symbols into parallel input symbols, and

a data-to-subcarrier mapper for mapping the parallel input symbols into the orthogonal subcarrier components.

///

8. The system of claim 1 wherein the receiver inverse transformed signals are received in sequence and forward transformed in parallel by the receiver forward transform, and the receiver forward transformed signals are received in sequence and inverse transformed in parallel by the receiver inverse transform, the system further comprising,

a first serial-to-parallel converter for converting the sequence of receiver inverse transformed signals into parallel receiver inverse transformed signals, and

a second serial-to-parallel converter for converting the sequence receiver forward transformed signals into parallel receiver forward transformed signals.

9. The system of claim 1 wherein the first and second mapped signals are first and second parallel mapped signals, the system further comprising,

a first subcarrier-to-data mapper for mapping the first parallel mapped signals into first parallel data symbols,

a first parallel-to-serial converter for converting the first parallel data symbols into the first receiver signals,

a second subcarrier-to-data mapper for mapping the second parallel mapped signals into second parallel data symbols,

a second parallel-to-serial converter for converting the second parallel data symbols into the second receiver signals.

///

10. A system for transmitting a sequence of data symbols as a divisional multiplexed signal across a channel, the system comprising a first module and a second module,

the first module comprising,

a first serial-to-parallel converter for converting the sequence of data symbols into first parallel input symbols, and

a first data-to-subcarrier mapper for mapping the first parallel input symbols into first orthogonal subcarrier components, and

a transmitter inverse transform for respectively inverse transforming the first orthogonal subcarrier components into transmitter inverse transformed signals,

the second module comprising,

a transmitter forward transform for respectively forward transforming the first orthogonal subcarrier components into transmitter forward transformed signals, and

a multiplexer for divisional multiplexing the transmitter inverse transform signals and the transmitter forward transformed signals into the divisional multiplexed signal being communicated over the channel.

///

11. The system of claim 10 further comprising,

a second serial-to-parallel converter for converting the sequence of data symbols into second parallel input symbols, and

a second data-to-subcarrier mapper for mapping the second parallel input symbols into second orthogonal subcarrier components, the transmitter forward transform forward transforming the second orthogonal subcarrier components into the transmitter forward transform signals.

12. The system of claim 10 wherein,

the divisional multiplexing is selected from the group consisting of frequency division, code division and time division.

13. The system of claim 10 wherein,

the transmitter inverse transforms are inverse fast Fourier transforms,

the transmitter forward transforms are forward fast Fourier transforms, and

the divisional multiplexing is frequency division multiplexing.

14. A system for receiving a divisional multiplexed signal across a channel and for generating an output, the division multiplexed signal comprising transmitter forward transformed signals and transmitter inverse transform signals, the system comprising a first module and a second module,

the first module comprising,

a demultiplexer for receiving and for divisional demultiplexing the divisional multiplexed signal into receiver inverse transformed signals and receiver forward transformed signals, the inverse transformed signals originating from th transmitter inverse transformed signals and the receiver forward transformed signals originating from the transmitter forward transformed signals,

a first serial-to-parallel converter for converting the receiver inverse transformed signals into parallel receiver inverse transformed signals, and

a forward transform for forward transforming the parallel receiver inverse transform signals into first parallel mapped signals,

a first subcarrier-to-data mapper for mapping the first parallel mapped signals into first parallel data symbols, and

a first parallel-to-serial converter for converting the first parallel data symbols into the first receiver signals,

the second module comprising,

a second serial-to-parallel converter for converting the receiver forward transformed signals into parallel receiver forward transformed signals,

a receiver inverse transform for inverse transforming the parallel receiver forward transform signals into second parallel mapped signals,

a second subcarrier-to-data mapper for mapping the second parallel mapped signals into second parallel data symbols,

a second parallel-to-serial converter for converting the second parallel data symbols into the second receiver signals, and

a combiner for combining the first and second receiver signals into the output signal.

15. The system of claim 14 wherein,

the divisional demultiplexing is selected from the group consisting of frequency division, code division and time division.

16. The system of claim 14 wherein,

the receiver inverse transforms are inverse fast Fourier transforms,

the receiver forward transforms are forward fast Fourier transforms, and

the divisional demultiplexing is frequency division demultiplexing.

17. The system of claim 14 wherein,

the transmitter and receiver inverse transforms are discrete transforms, and

the transmitter and receiver forward transforms are discrete transforms.

///